

REMARKS

This responds to the Final Office Action mailed on June 12, 2009.

No claims are amended, canceled, or added; as a result, claims 1-23 remain pending in this application.

Interview Summary

Applicants filed an interview summary on July 10, 2009 for the telephone conversation with Examiner Ben Wang on May 27, 2009.

§ 102 Rejection of the Claims

Claims 1-23 were rejected under 35 U.S.C. § 102(b) as being anticipated by Quinn Able Jacobson (High-Performance Frontends for Trace Processors, 1999, University of Wisconsin – Madison)(hereinafter ‘Jacobson’).

Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration.¹ Applicant respectfully submits that the Office Action did not make out a *prima facie* case of anticipation. Jacobson does not teach or disclose each and every element of applicant’s claims because Jacobson does not describe *working sets*, instead Jacobson describes *traces*.

The Office Action reproduces Figure 5-3 of Jacobson; however, Figure 5-3 illustrates an example global history branch predictor. As shown in Figure 5-3, a shift register stores the outcomes of the previous N branches which are used along with the PC of the current branch instruction to index a table of 2-bit counters and make a prediction.² The 2-bit counters “implement the functionality of encoding a prediction and one bit of hysteresis.”³ Thus, using the outcomes of the previous N branches (in sequence) may make any working set information indiscernable. Because the previous branch outcomes are used, the contents of the table indexed by the hash function will not be the same for

¹ *In re Dillon* 919 F.2d 688, 16 USPQ2d 1897, 1908 (Fed. Cir. 1990) (en banc), cert. denied, 500 U.S. 904 (1991).

² See Jacobson Page 167 Lines 18 – 20.

³ See Jacobson Page 167 Lines 17 – 18.

multiple occurrences of the same working set. In fact, the same working set can yield a large number of different table contents (each depending on the outcomes of previous N branches). As a result, the 2-bit counters shown in Figure 5-3 are not a “representation of a working set” and the Current Branch PC/Previous Branch Outcome are not a “working set” as suggested in the Office Action.

The Office Action also emphasizes on Page 16 that “the features upon which applicant relies (i.e., ‘a working set’ definition or definition of a ‘plurality of working set elements’) are not recited in the rejected claim(s).” However, the Applicant respectfully points out the following procedures for handling a reply arguing that a term in the claim is limited to a special definition provided in the written description:

If during examination of an application, the examiner has given a term in the claim its plain meaning as interpreted by one of ordinary skill in the art and applied prior art accordingly, and in applicant’s reply pursuant to 37 CFR § 1.111, applicant argues that the term in the claim is limited to the special definition set forth in the written description (by referring specifically to the page and line/paragraph number of the specification), the examiner must review the written description to determine whether applicant’s argument has support in the written description. . . If applicant’s argument is persuasive, that is, the written description explicitly and clearly set forth a special definition for the term in the claim, the examiner should reconsider the rejection in view of applicant’s reply.⁴

As previously argued in the response under 37 CFR § 1.111, the term working set is explicitly and clearly defined in the written description as follows:

“In a program, a working set $W(t_i, \tau)$ for $i=1,2,\dots$, is a set of distinct memory segments $\{s_1, s_2 \dots s_m\}$ accessed over the i^{th} window of size τ . . .”⁵

With regard to this definition, the written description further states that “[t]he window is a sequence of τ consecutive memory accesses. The working set size is ω , the cardinality of the set of unique segments that are accessed by members of the window.”⁶

Thus, a “working set” as defined in the Applicant’s written description is not a “trace” as described by Jacobson. The Applicant respectfully requests that the Office

⁴ See June 25, 2003 memo to the Patent Examining Corp regarding claim interpretation and procedures for handling applicant’s reply arguing that a term in the claim is limited to the special definition provided in the written description (available at <http://www.uspto.gov/web/offices/pac/dapp/opla/documents/claiminterpret.pdf>).

⁵ See Page 3 Lines 5 – 6 of the present application.

⁶ See Page 3 Lines 9 – 13 of the present application.

reconsider the rejection in view of this definition and allow the claims because Jacobson does not disclose:

- “to instantiate a data structure in the memory to collect a representation of *a working set*,” as claimed in independent claim 1
- “mapping *a plurality of working set elements* into fields of a data structure using a hash function” as claimed in independent claim 8
- “updating a field of a table indexed by the hash value wherein the table represents *the working set*” as claimed in independent claim 12
- “a data structure to collect a representation of *a working set*; and a hash unit to map *a plurality of working set elements* into the data structure using a hash function” as claimed in independent claim 13.
- “Receiving *a signature for a working set*; and Estimating the size of the working set based on the size of the signature” as claimed in independent claim 15
- “comparing *a current working set signature* to a previous working set signature; . . . and identify *a working set change* when the relative signature distance exceeds a predetermined threshold” as claimed in independent claim 17
- “comparing *a current working set signature* to *one or more previous working set signatures*; . . . and identifying *a recurring working set* when the relative signature distance between the current working set signature and one of the previous working set signatures is within a predetermined threshold” as claimed in independent claim 19
- “maintaining a table comprising *a plurality of working set signatures* for a program; upon detecting *a working set change*, looking up *a working set signature for a current working set* in the table;” as claimed in independent claim 22

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's representative at (612) 349-9592 to facilitate prosecution of this application.

If necessary, please charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 12th day of August, 2009.

Ann McCrackin

Name

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Signature